HDMI to DVB-T encoder Modulator
User's Manual

SW Version: 5.03

HW version: 4.8

Web NMS version: 4.02

HD HDMI to DVB-T Modulator

All-in-one HD Encoder + DVB-T Modulator

- 1920*1080@50P/60P Full HD support
- MPEG4/AVC H.264 Encoding
- 1*HDMI in, 1*HDMI backup 1*RF in
- 1*ASI in, 2*ASI out(optional)
- RF COFDM DVB-T out, 1*IP(UDP)out
- DVB-C/S/S2 ISDB-T optional
- LCN support (Logical channel Number)
- Excellent modulation quality MER≥42dB
- RF Frequency range 30Mhz~960Mhz
- WEB NMS, easy operation
- Multiplexer embedded
- Breakthrough price—cost down

Directory

Chapter 1 Introduction

1.1 Product overview

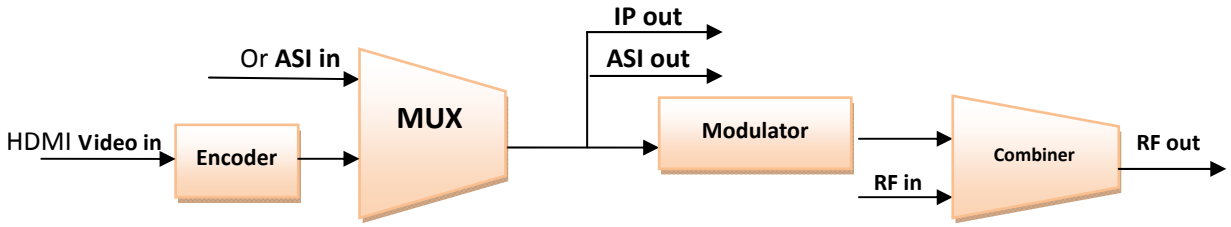
It has equipped with 1 channel HDMI input, and 1 RF input.

For output it could be IP out, and DVB-T RF out. Therefore this device can be worked as a HD encoder, IP encoder, COFDM modulator, or HDMI to DVB-T RF out converter. 1 ASI input and 2 ASI out are available in optional.

The signals source could be from satellite receivers, closed-circuit television cameras, Blue-ray players, and antenna etc. its output signal is to be received by a DVB-T standard TV, DVB-T STB, or computer via its IP interface.

The device can be used in public place such as metro, market hall, theatre, hotels, resorts, etc for advertising. It also can be used for monitoring, training and educating in company, schools, campuses, hospital… besides that it's a good choice for bars to offer HD sports channels, for VIP entertainment channels, for enjoy digital video via computer.

1.2 Principle chart



1.3 Specification

Encoding section

Video

Encoding	H.264/AVC High Profile Level 4.0(HD)
Input	HDMI*1
Resolution	1920*1080_60P, 1920*1080_50P, 1920*1080_60i, 1920*1080_50i, 1280*720_60p, 1280*720_50P

Audio

encoding	MPEG1 Layer II
Sample rate	48KHz
Bit rate	64kbps, 96kbps,128kbps, 192kbps, 256kbps, 320kbps

DVB-T modulator section

Standard	EN300744
FFT mode	2K, 8K
Bandwidth	6M,7M,8M
Constellation	QPSK, 16QAM, 64QAM
Guard Interval	1/4, 1/8, 1/16, 1/32
FEC	1/2, 2/3, 3/4, 5/6, 7/8
MER	≥42dB
RF frequency	30~960MHz, 1KHz step
RF output level	-30~ -10dbm(81~97 dbμV), 0.1db step

Interface

Local interface	LCD + control buttons
Remote management	Web NMS
Language	English

General

Power supply	AC 100V~240V
Dimensions	250*268*44mm
Weight	2.6kgs
Operation temperature	0~45℃

Chapter 2 Product Description

2.1 Indicators and Key-buttons Details

Front

9 10

① UP button: press to move up
② Down button: press to move down
③ Left button: Press to move left
④ Right button: press to move right
⑤ Enter button: for confirm
⑥ Menu button: for back step
⑦ Lock button: press to lock set
⑧ LCD window: LCD display
⑨ HDMI port: HDMI input (1 HDMI is backup)
⑩ Power SW: Power on/off switch

Rear

① NMS port: input NMS
② Data port : IP input/output
③ ASI interface: ASI in
④ AST out 1 interface
⑤ ASI out 2 interface
⑥ RF in interface
⑦ RF out interface

2.2 Installation precautions

This section to explain the cautions the users must know in some case that possible injure may bring to users when it's used or installed. For this reason, please read all details here and make in mind before installing or using the product.

General Precautions

- ✓ Must be operated and maintained free of dust or dirty
- ✓ The cover should be securely fastened, do not open the cover of the products when the power is not off.
- ✓ After use, securely stow away all loose cables, external antenna, and others.

Power precautions

- ✓ When you connect the power source, make sure if it may cause overload.
- ✓ Avoid operating on a wet floor in the open. Make sure the extension cable is in good condition
- ✓ Make sure the power switch is off before you start to install the device

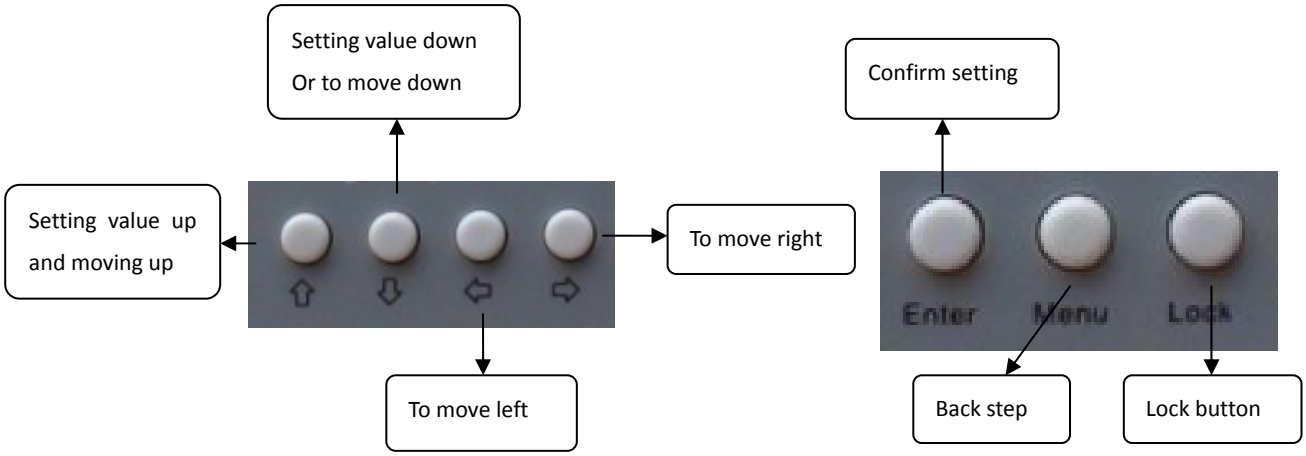
Grounding Requirement

- ✓ All function modules' good grounding is the basis of reliability and stability of devices. Also, they are the most important guarantee of lightning arresting and interference rejection. Therefore, the system must follow this rule.
- ✓ Grounding conductor must adopt copper conductor in order to reduce high frequency impedance, and the grounding wire must be as thick and short as possible.
- ✓ Users should make sure the 2 ends of grounding wire well electric conducted and be antirust.
- ✓ It is prohibited to use any other device as part of grounding electric circuit
- ✓ The area of the conduction between grounding wire and device's frame should be no less than 25mm2.

Chapter 3 Operation

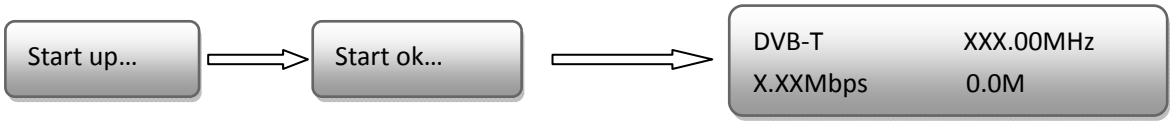
3.1 Button introduction

LCD display window
Display window for setting menu
Status display when power on



3.2 Initial Status

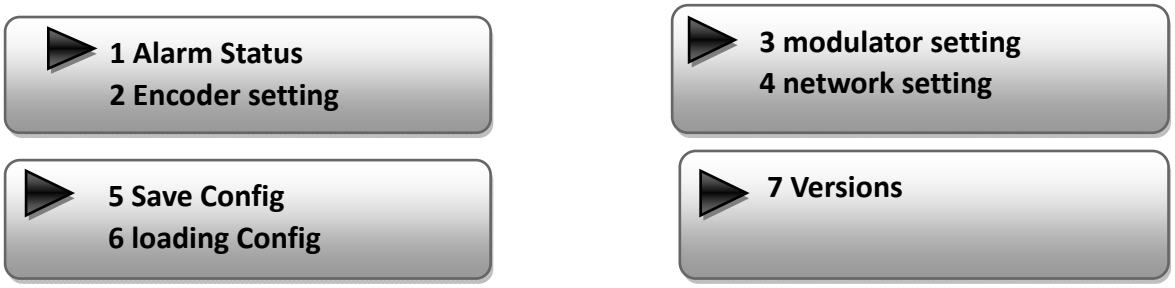
Switch on then below status will be displayed, few seconds' initialization then open startup picture.



- DVB-T : indicate the modulation standard of this device
- XXX.XX MHz indicate the input frequency, and the frequency range is 30~960MHz
- X.XX Mbps indicate the encoding bit rate
- 0.0M

3.3 general setting for Main Menu

By pressing "Lock" key to enter the main menu, the LCD will display the following pages:



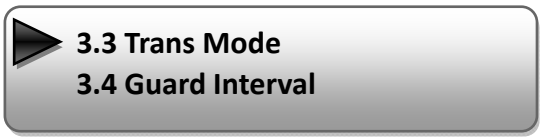
User pressing UP or DOWN buttons to specified menu item, and then pressing ENTER to enter the submenus as below:

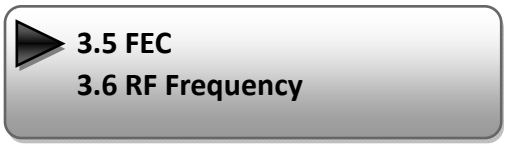
1) **Alarm status ---** the alarm indicator will light on if there is no A/V signals input

2) **Encoder setting ---** choose this submenu, the LCD will show "**input setting**", press the ENTER key and control the UP or Down key to move the arrow. User could find how to set the audio and video encoding bit rate.

3) **Modulator setting**

When the "modulator setting" submenu has been chosen, users can find below different parameters for setting. And the LCD window would respectively show like these.





- **Bandwidth**

There are three possible options provided for selecting bandwidth: 6M, 7M, and 8M. When the display shows them, user just need swift LEFT and RIGHT key to choose and repressing "ENTER" for confirm.

- **Constellation**

Three different constellations: QPSK, 16QAM, and 64QAM will be show on the LCD window when Constellation been entered.

QPSK: Quadrature Phase Shift Keying, Selecting this option indicates the device works as DVB-S modulation mode

16QAM: Quadrature Amplitude Modulation is 16

64QAM: Quadrature Amplitude Modulation is 64

Setting method just the same, when the display shows them, user just need swift LEFT and RIGHT key to choose and repressing "ENTER" for confirm.

- **Trans mode**

After entering Trans mode, the LCD would show the current working mode. User can move LEFT/RIGHT key and repress ENTER key to select and confirm. 2K and 8K are the options.

2K: when the device works as current mode, the number of current carrier is 2048

8K: when the device works as current mode, the number of current carrier is 8192

- **Guard interval**

In communications, guard intervals are used to ensure that distinct transmissions do not interfere with one another. These transmissions may belong to different users (as in TDMA) or same user (as in OFDM).

The purpose of the guard interval is to introduce immunity to propagation delays, echoes and reflections, to which digital data is normally very sensitive.

There are four possible options provided to be selected. They are 1/4, 1/8, 1/16, 1/32. User can shift the LEFT/RIGHT key to select and press ENTER to confirm.

- **FEC**

Forward Error Correction (FEC) rates include 1/2, 2/3, 3/4, 5/6, and 7/8. After entering FEC submenu, and the LCD display would shows them, users just need press LEFT and RIGHT button to choose, and press ENTER button for confirm.

- **RF Frequency**

The RF output frequency range is from 30 to 1000MHz with 1K stepping. After entering the RF frequency setting submenu, users the can press LEFT, RIGHT, UP, and DOWN buttons to adjust the frequency and confirm by press ENTER button.

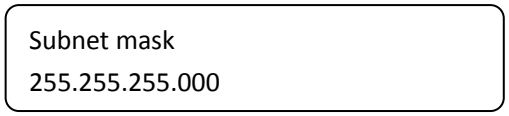
- **RF out level**

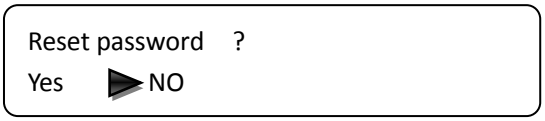
The RF attenuation range is from -30~-10dbm (81~97dbμV) with 0.1db step. After entering this setting submenu, user can shift UP/DOWN/LEFT/RIGHT key to set the output level and press ENTER to confirm.

4) Network setting

Afte inter netwok setting, there are three Submenu Items for setting, just show as the following LCD display pictures.

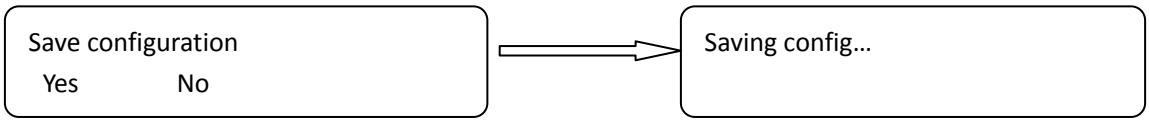
User can press “UP/DOWN” to choose this item. “Enter” and “LEFT/RIGHT” to set the parameters. Note: The MAC address is according to the factory setting, and it’s unique. The display will respectively show as below:





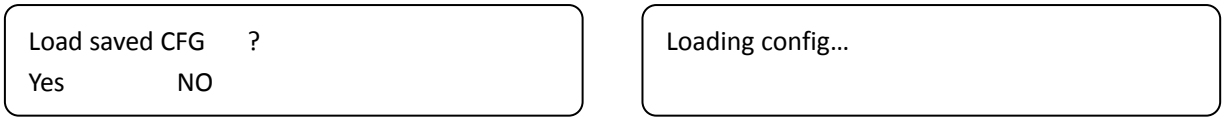
5) Save config

Users enter save config submenu for saving settings. Choose yes for confirm set.



6) Loading config

At this menu, user can press UP/DWON key to select and repress ENTER to confirm. User can restore the device into the last saved configuration by choosing “6.1” and restore the device into factory configuration by choosing “6.2” the display will show as below:



7) Version

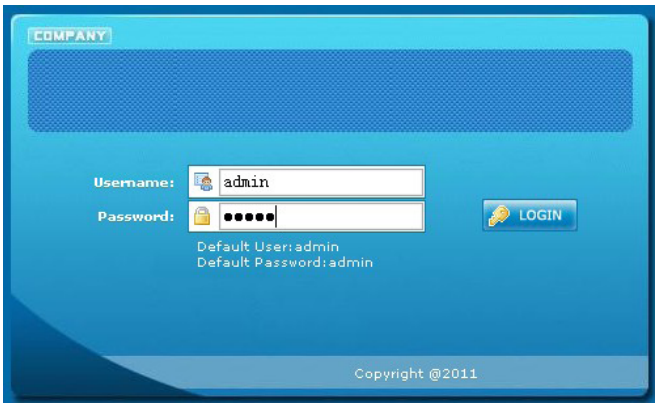
User can check the hardware version and software version of this equipment when enter this submenu.

Chapter 4 WEB NMS operation

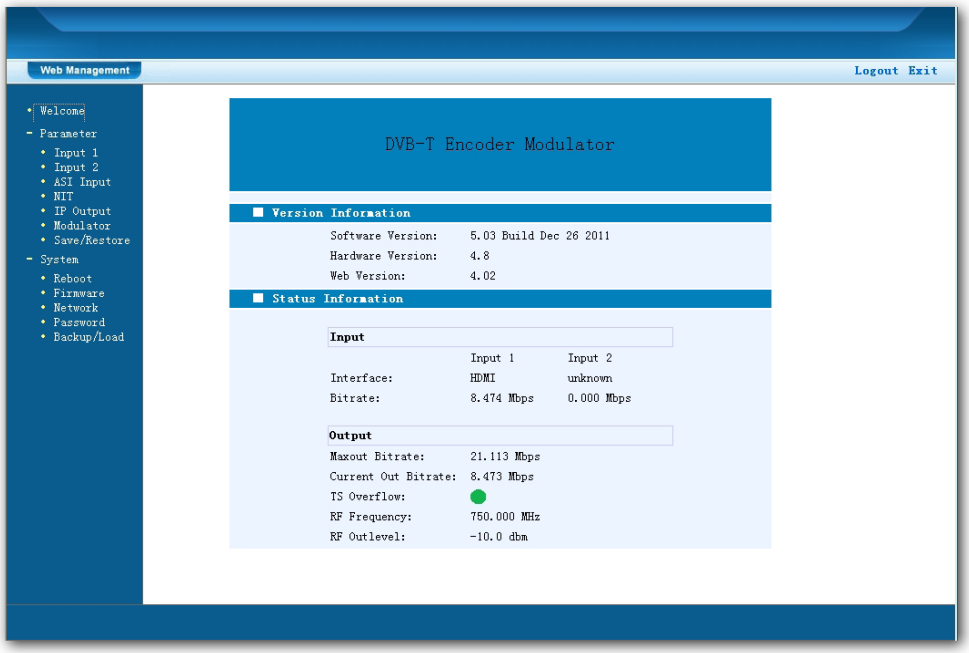
User not only can use front buttons for setting configuration, but also can control and set the configuration in computer by connect to web NMS Port. User should ensure that the computer's IP address is different from the modulator's IP address; otherwise, it would cause IP conflict.

4.1 login

A login interface will pop up firstly when user entered the IP address: http://192.168.0.136 , the interface shows as follow picture. Both of the default user name and password are admin.

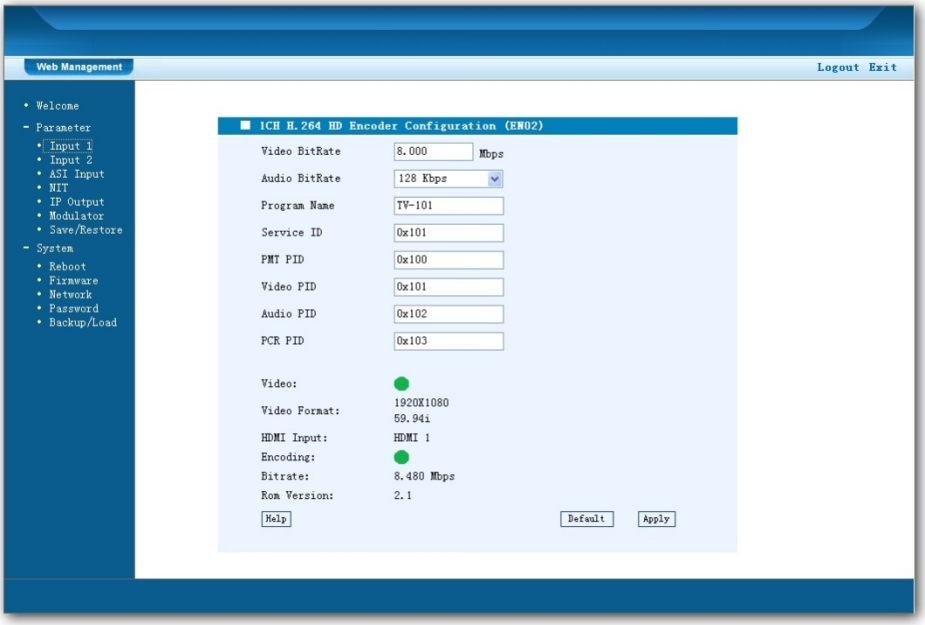


User will face welcome interface after login, and all setting options are been listed on the left side. And the main window at the right shows version information and status information. (All the example pictures been showed here just window captures pictures when the device connected in our test room, status shows on the picture just for reference, they are not fixed value)



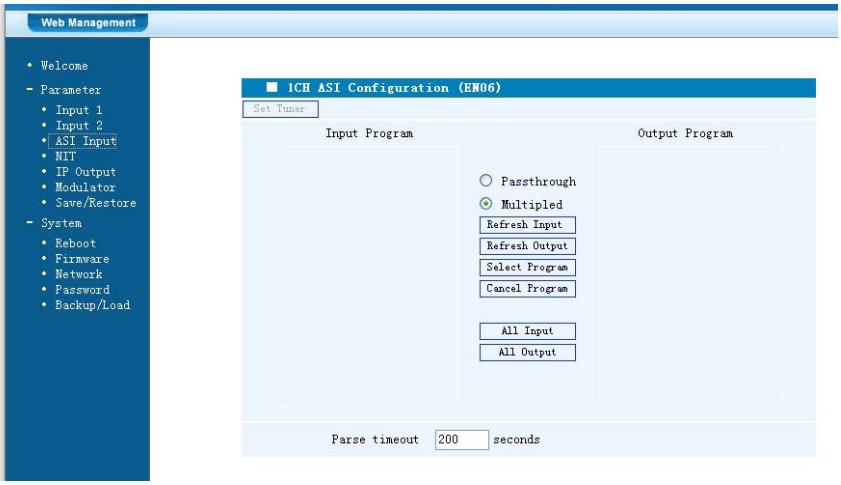
4.2 configuration setting

1) HDMI input setting

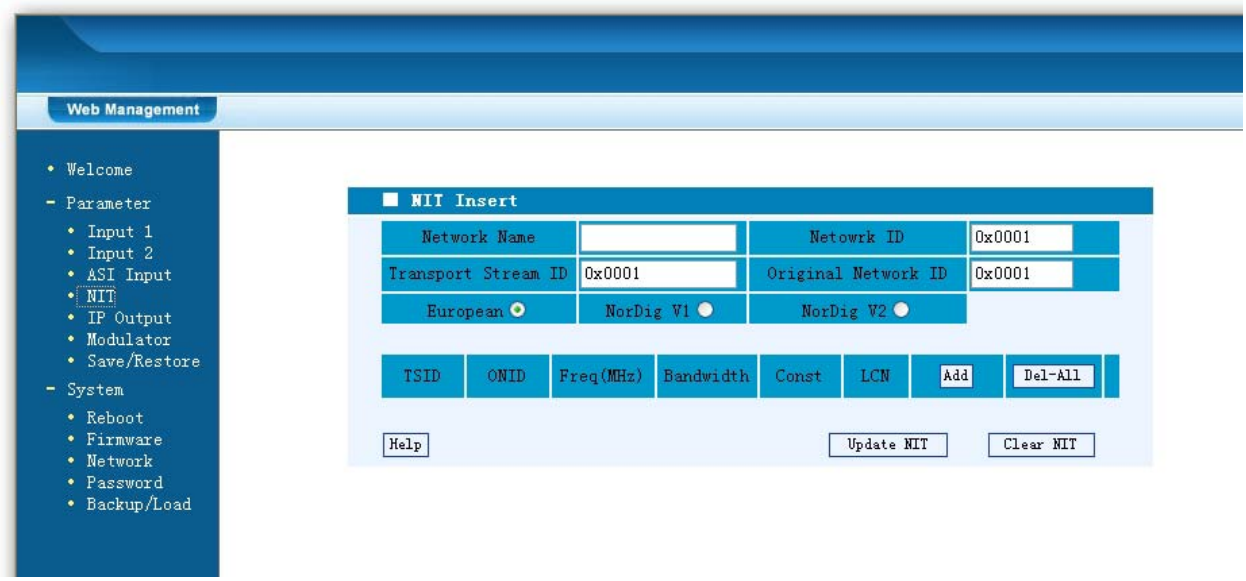


- Video bit rate: user can set the video bit rate in this area, the range is 1~19.5Mbps.
- Audio bit rate: user can set the audio bit rate in this area, there are five possible options provided to be selected: 64kbps, 96kbps, 128kbps, 192kbps, 256kbps and 320kbps. The default value is 128kbps.
- Program name: it shows current program information. User can select and type the program name to be played as needed.
- PMT/Video/Audio/PCR PID: in this area, user can set program PIDs as needed, usually system will automatically select the default values.
- Encoding and video light: the light should show green color normally
- HDMI input: it shows if there is real-time HDMI signal inputting
- Video format: the current video format of the device
- Bit rate: the current encoding bit rate

2) ASI input setting

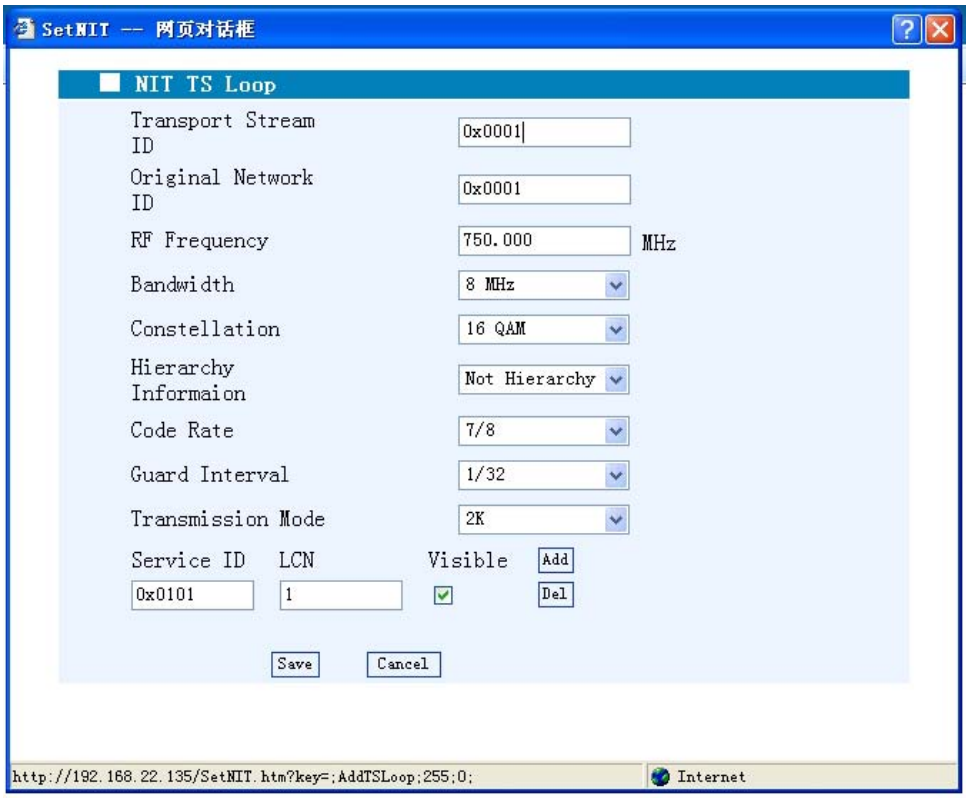


3) NIT table setting



The location of the NIT is defined in the present document in compliance with ISO/IEC 13818-1 [1] specification, but the data format is outside the scope of ISO/IEC 13818-1 [1]. It is intended to provide information about the physical network. The syntax and semantics of the NIT are defined in the present document.

- Network name: The name of current network, user can chang it as he likes.
- Network ID: This is a 16-bit field which identifies the terrestrial network that supports the service indicated.
- User can click “Add” to pop up a table, following is the interface:

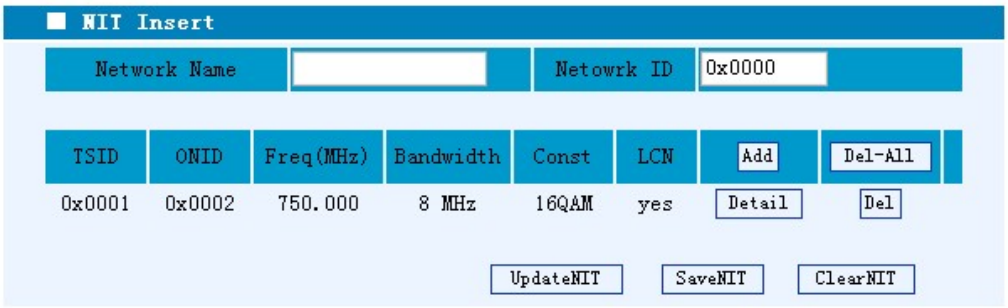


- Transport stream ID: This 16-bit field which serves as a label identifying the TS which contains the service, event or mosaic described by the cell.
- Original network ID: This is also a 16-bit field, a label which in conjunction with the following fields uniquely identifies a service, event or mosaic.
- RF Frequency: user can set the RF frequency in this menu. The range is 30~960MHz with 1 KHz step.
- Bandwidth: there are three possible options provided to be selected: 6M, 7M and 8M.
- Constellation: there also have three possible options to be selected: QPSK, 16QAM and 64QAM.
- Hierarchy information: this option only adopts ISDB-T standard device.
- Code rate: user can select the FEC value in the pull-down menu. There are five possible options provided to be chosen: 1/2, 2/3, 3/4, 5/6 and 7/8.
- Guard interval: user can select the guard interval value in the pull-down menu: 1/32, 1/16, 1/8 and 1/4.
- Transmission mode: user can decide transmission mode 2k or 8k.
- Service ID: unique identifier of a service within a TS

  LCN: logical channel number

User can add a logical number in system by clicking “Add” menu and typing the program information. The LCN can be added more than one by re-clicking “Add” option. The interface shows as below:

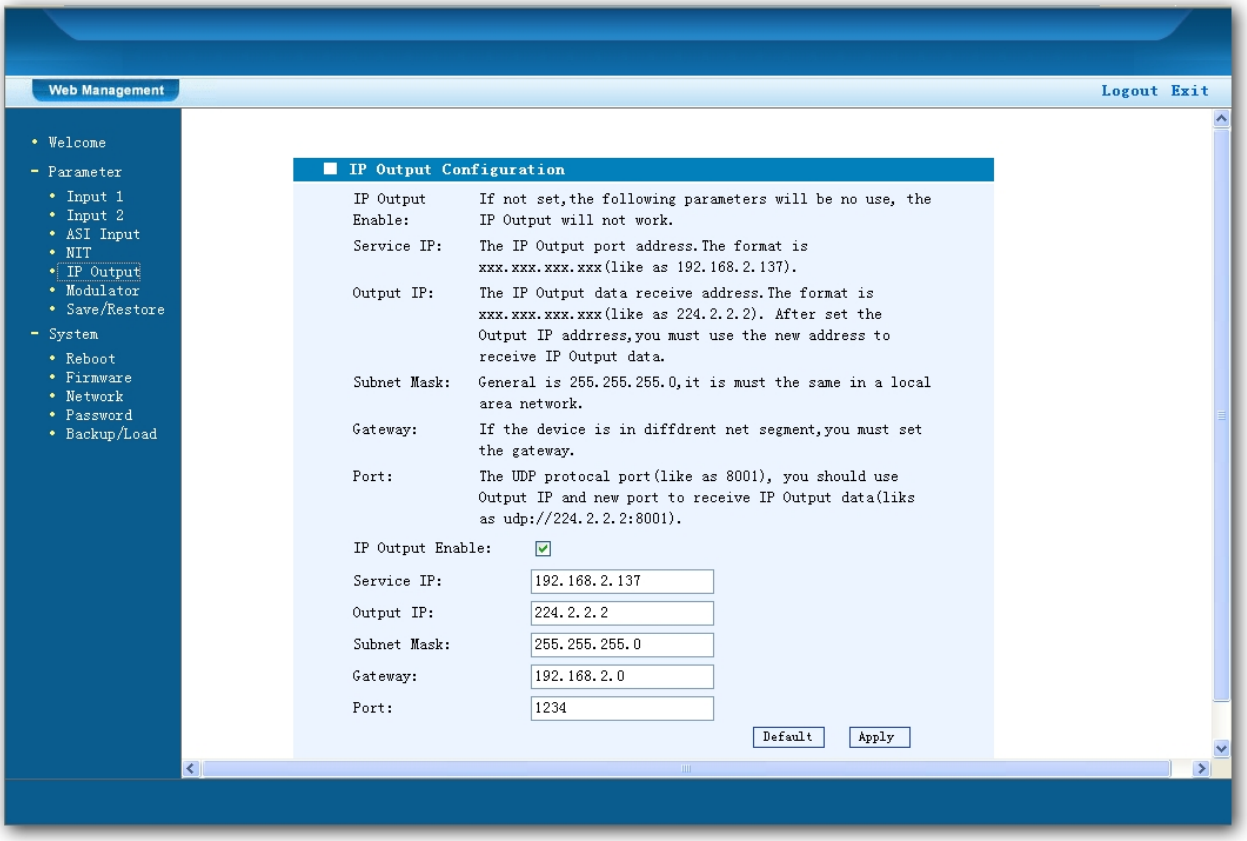
- Del: clicking “Del” to delete the added LCN information
- Save: clicking “Save” to save the current NIT parameters
- Cancel: clicking “Cancel” to exit the edit interface
- The display will show as below when user saved the NIT settings



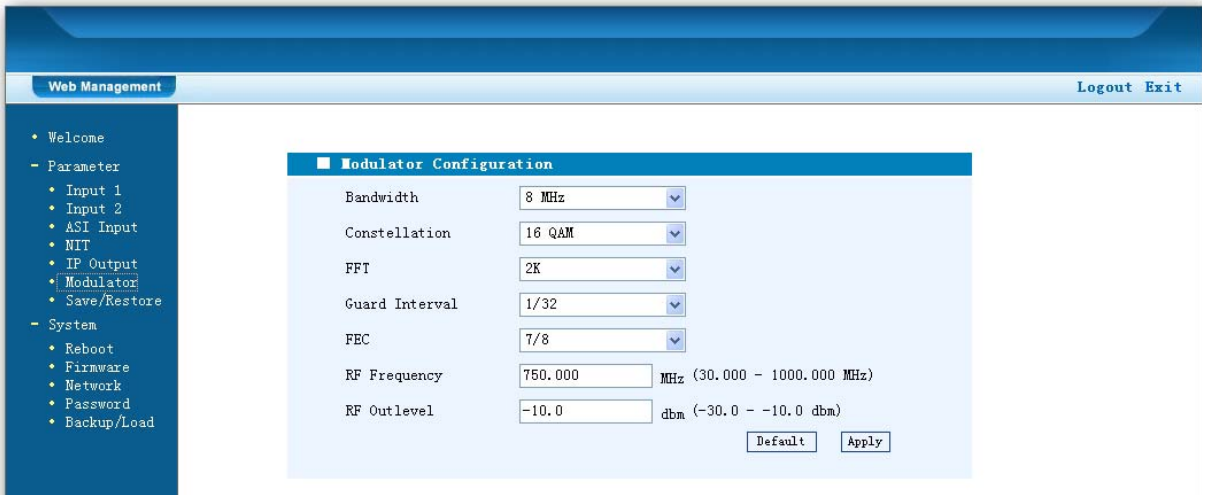
- Update NIT: clicking to update the NIT tables in system
- Save NIT: clicking to save the settings
- Clear NIT: clicking to remove all the table have been inserted before

4) IP out setting

Follow the help guideline for set IP out configuration



5) Modulator setting

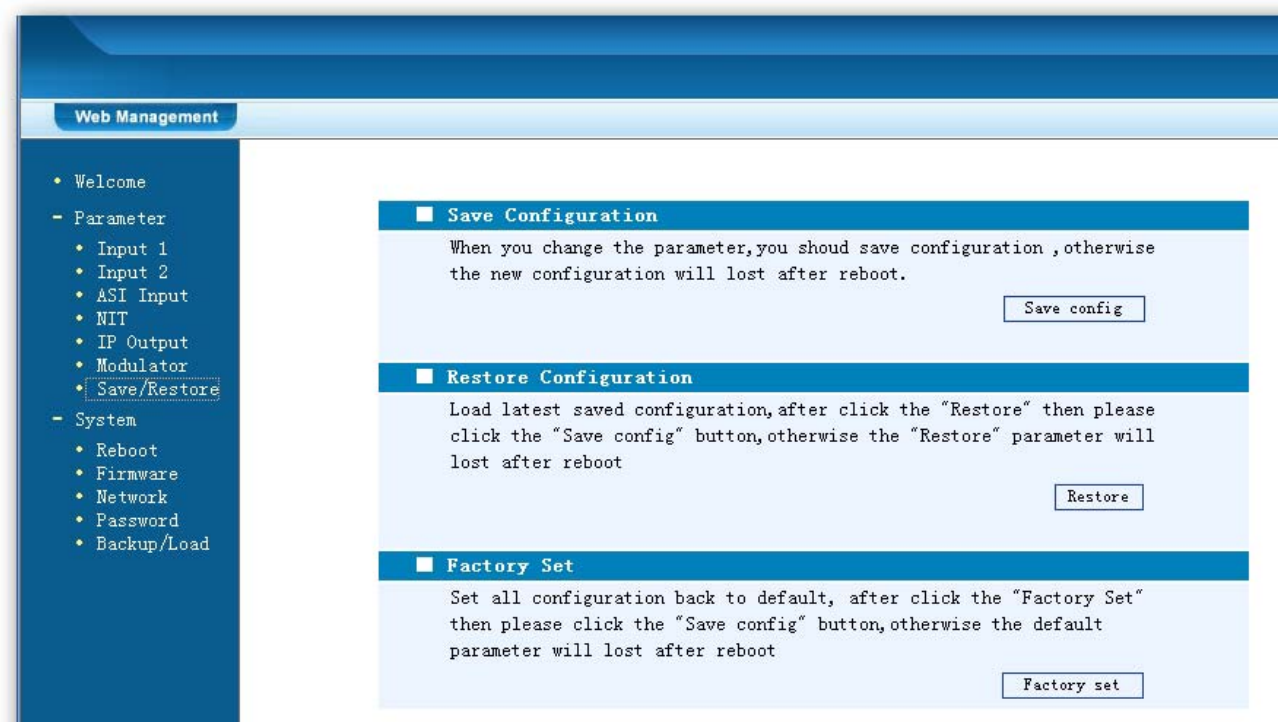


- Bandwidth: there are three possible options provided to be selected: 6M, 7M and 8M.
- Constellation: there also have three possible options to be selected: QPSK, 16QAM and 64QAM.
- FFT: user can set the FFT (transmission mode) by selecting in the pull-down menu
- Guard interval: user can select the guard interval value in the pull-down menu: 1/32, 1/16, 1/8 and 1/4.
- FEC: user can select the FEC value in the pull-down menu. There are five possible options provided to be chosen: 1/2,

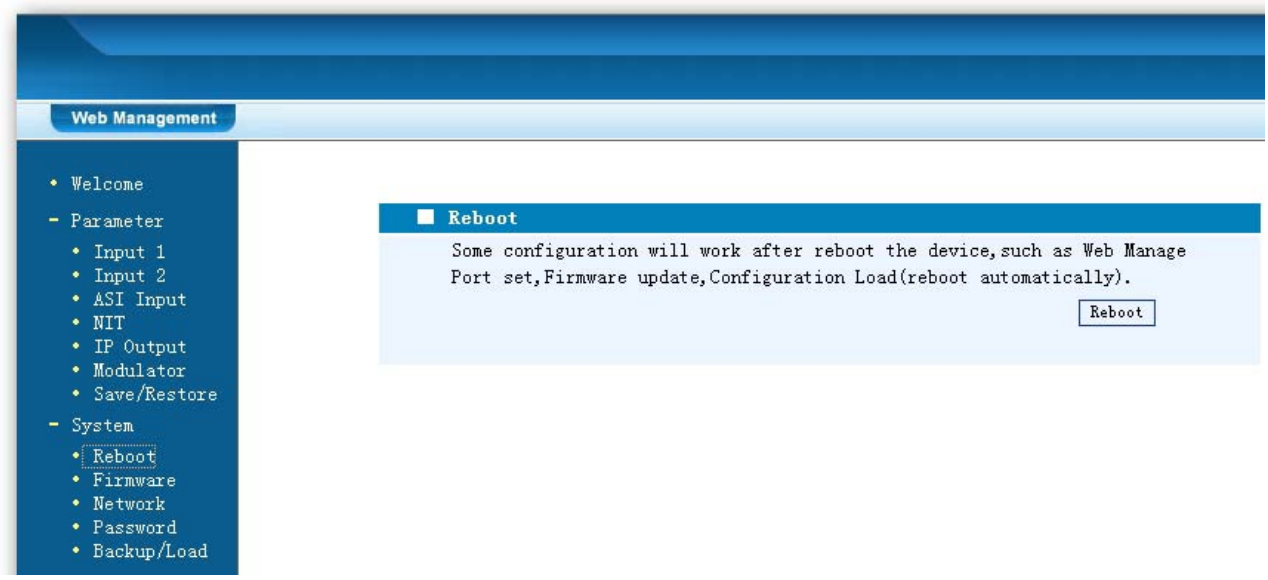
2/3, 3/4, 5/6 and 7/8.

- RF frequency: the range is 30~1000MHz
- RF output level: the range is -30~-10dbm

6) Save/Restore



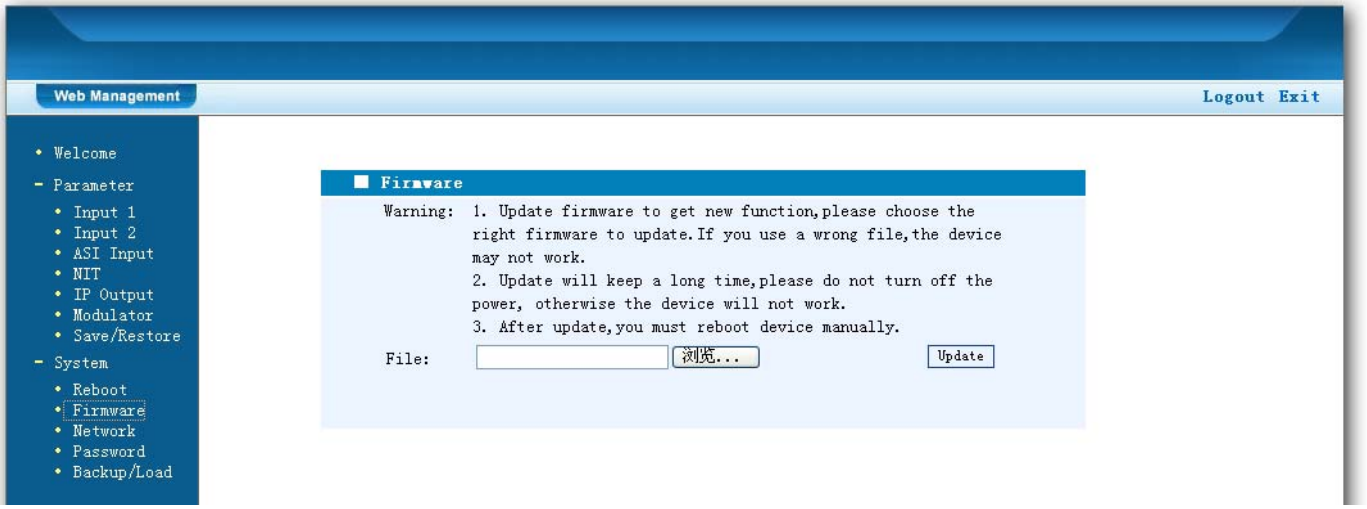
7). Rebooth



8) Firmware

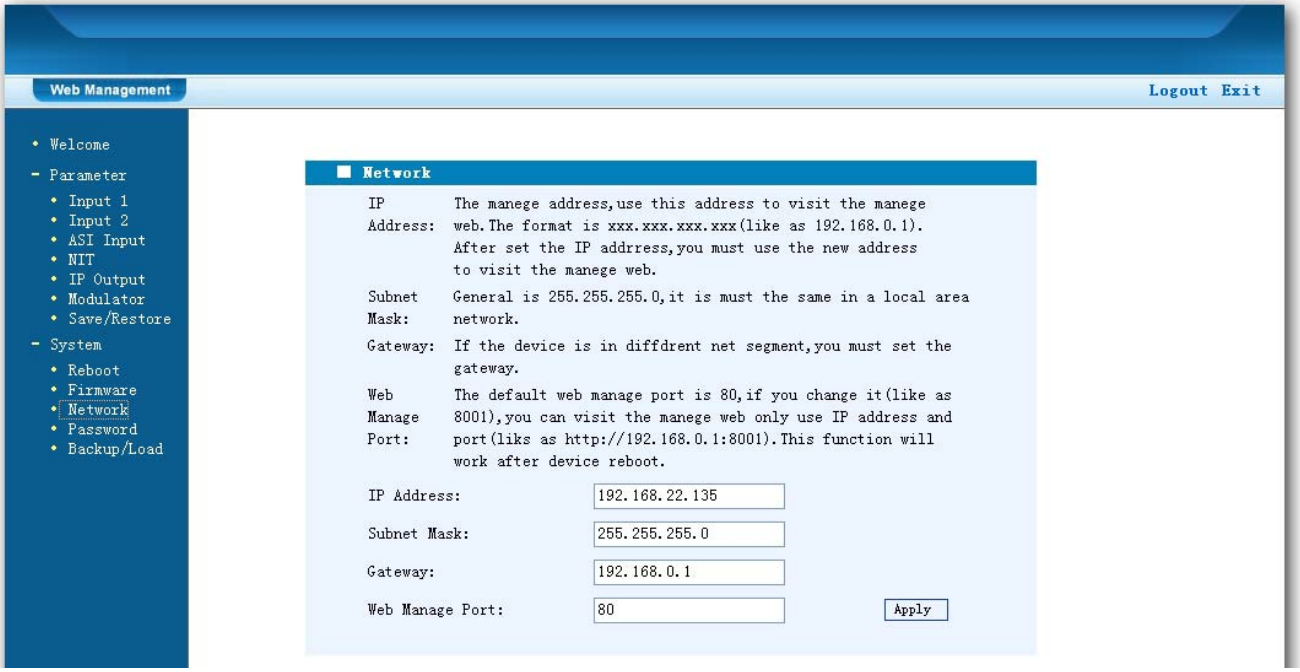
This function is used to upgrade the device's latest software program. If user wants to update the device to latest version, he should contact with manufacturer to get the latest version software. When upgrading it, user can click the "浏览..." button to select the program needs burned into system.

Note: User should strictly follow the "Warning" information.



9）Network

This interface indicates the default IP address and network mask of this device. User can revise it and click "Apply" to confirm.



10) Password

User can revise the login password in this menu by type accordingly information as required and click “Apply” to confirm.